

Installation Manual

Thermostat Series

TTSTBM3H2CPH6W-A THERMOSTAT AND WIRELESS COMMUNICATING BASE MODULE



TTSTBM3H2CPH6W-A

6 720 220 376 Revised 02-13



BOSCH

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Warning: If you are setting up this thermostat for an AC unit with electric heat, or gas furnace, it is imperative that the the “FAN OPERATION” menu feature is set to ELE or GAS, which ever applies. The default setting is GAS; if electric heat strips are installed and the default value of GAS is used, it is possible that the electric heat strips can become energized without the blower motor on when there is a call for heat. Reference the Tech Menu Setup section on how to change this feature.

The TSTBM3H2CPH6W-A offers the following:

- 3 stages of heating
- 2 stages of cooling
- Temperature averaging with remote sensors
- Wireless control
- 5+1+1 & 7 Day Programmable

THERMOSTAT APPLICATIONS GUIDE

Description	
Gas or Oil Heat	Yes
Electric Furnace	Yes
Heat Pump (No Aux. or Emergency Heat)	Yes
Heat Pump (with Aux. or Emergency Heat)	Yes
Multi-stage Systems	Yes
Heat Only Systems	Yes
Cool Only Systems	Yes
Dual Fuel Systems	Yes
Millivolt	No
Humidity	Yes
Auto Change Over	Yes

POWER TYPE

- Battery Power*
 - Hardwire (Common Wire)
 - Hardwire (Common Wire) with Battery Backup
- * If using remote sensors the thermostat must be hardwired.



A trained, experienced technician must install this product. Carefully read these instructions. You could damage this product or cause a hazardous condition if you fail to follow these instructions.



This thermostat is shipped from the factory to operate a conventional heating and cooling system. This thermostat will also operate a heat pump system. See the "heat pump" configuration step in the Tech Menu setup of this manual to configure the thermostat for heat pump applications.

THERMOSTAT QUICK REFERENCE

Getting to know your thermostat




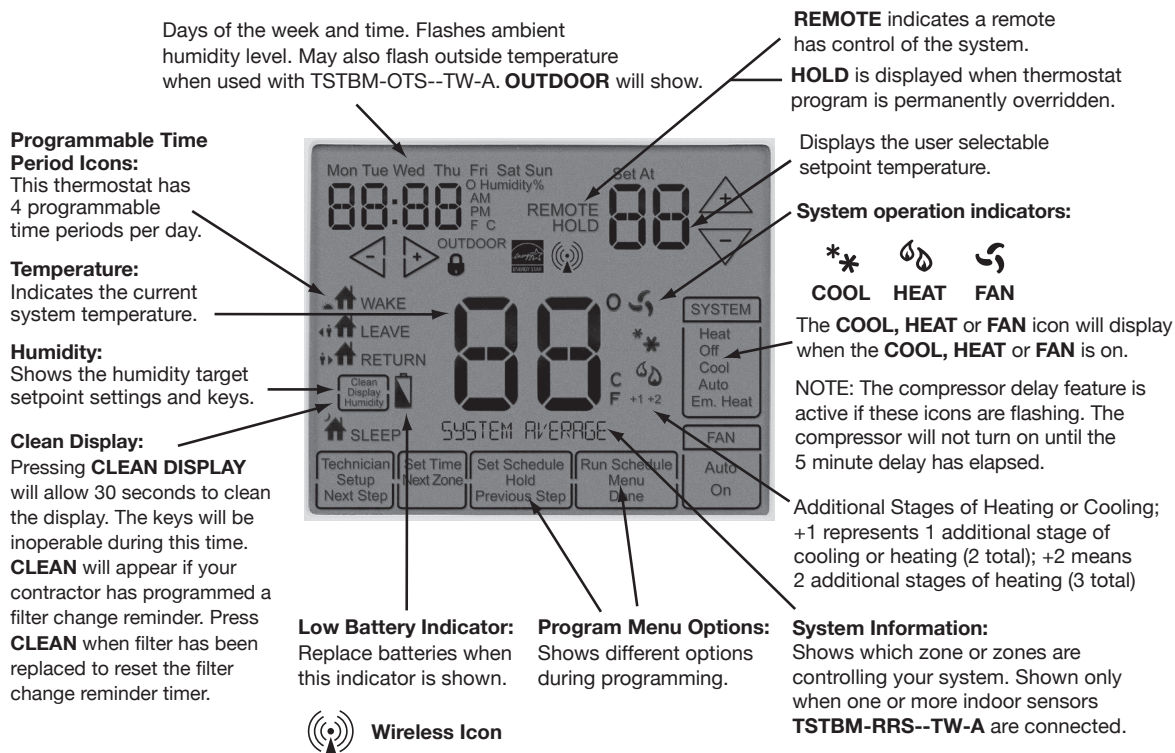
1. LCD Display
2. Glow in the Dark Light Button*
3. Fan Button
4. System Button
5. Temperature Setpoint Buttons
6. Menu Button
7. Humidity Button



NOTE ABOUT THE LIGHT BUTTON:
This button is used to light up the display, but it is also used to set up communication with the base module. DO NOT hold the light button down for more than 10 seconds, unless you are performing the initial communication setup steps.

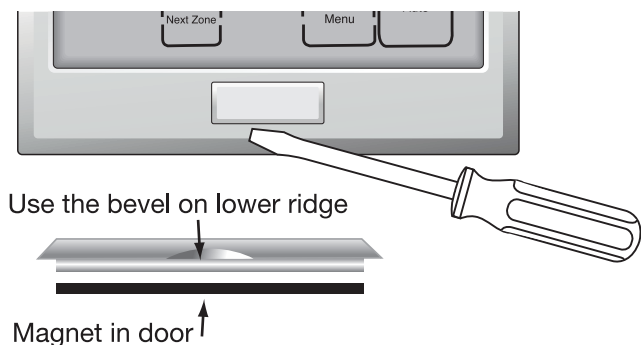


The low battery indicator  is displayed when the AA battery power is low. If the user fails to replace the battery within 21 days, the thermostat display will only show the low battery indicator as a final warning before the thermostat becomes inoperable. The batteries are located on the back of the thermostat.



INSTALLATION TIPS

REMOVING THE PRIVATE LABEL BADGE



Gently slide a screwdriver into the bottom edge of the badge. Gently turn the screwdriver counter clockwise. The badge should pry off easily. **Do not use force.**



All Bosch thermostats use the same universal magnetic badge. Contact your local Bosch distributor to learn more about our free private label program.

WALL LOCATIONS

The thermostat should be installed approximately 4 to 5 feet above the floor. Select an area with average temperature and good air circulation.

Do not install thermostats in locations that are:

- On an exterior wall
- In direct sunlight
- Where there may be concealed chimneys or pipes behind the wall
- Close to a window or door leading outside
- Close to objects radiating heat such as fireplaces, lighting, space radiators, or any other appliance
- In areas that do not require conditioning
- In dead spots or where drafts can occur (behind doors or in corners)
- Close to hot or cold air ducts



Pick an installation location that is easy for the user to access. The temperature of the location should be representative of the building.



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6 720 220 376

Subject to change without prior notice

Revised 02-13

BASE MODULE—BASEMENT INSTALLATION

Wireless Range

Range between the TSTBM3H2CPH6W-A and the base module is up to 100 feet with no obstructions and up to 50 feet in standard residential metal, brick, and concrete construction. To extend the range try placing the base unit higher if in a basement or further away from large metal objects.

Do not install the base module in locations:

- Where temperatures could exceed 150°F
- That could be exposed to rain or snow
- That could be exposed to freezing conditions
- That are behind a chimney
- Where high moisture is possible



The base module is NOT water or weatherproof and should only be installed in a conditioned space.

BASE MODULE—ATTIC INSTALLATION

Attic installation of the base module should be avoided. Instead, locate a closet near the air conditioning unit, then mount the base module high on the wall inside the closet or on the ceiling of the closet. This location will insure the base module is below the 150°F maximum ambient temperature specification.

For vertical mount put one screw top and one screw bottom. For horizontal mount put one screw left and one screw right.



Failure to disconnect the power before beginning to install this product can cause electrical shock or equipment damage.



Mercury Notice: All Bosch thermostats are mercury free. However, if the product you are replacing contains mercury, dispose of it properly. Your local waste management authority can give you instructions on recycling and proper disposal.

WIRING

1. If you are replacing a thermostat, make note of the terminal connections on the thermostat that is being replaced. In some cases the wiring connections will not be color coded. For example, the green wire may not be connected to the G terminal.
2. Loosen the terminal block screws. Insert wires then retighten terminal block screws.

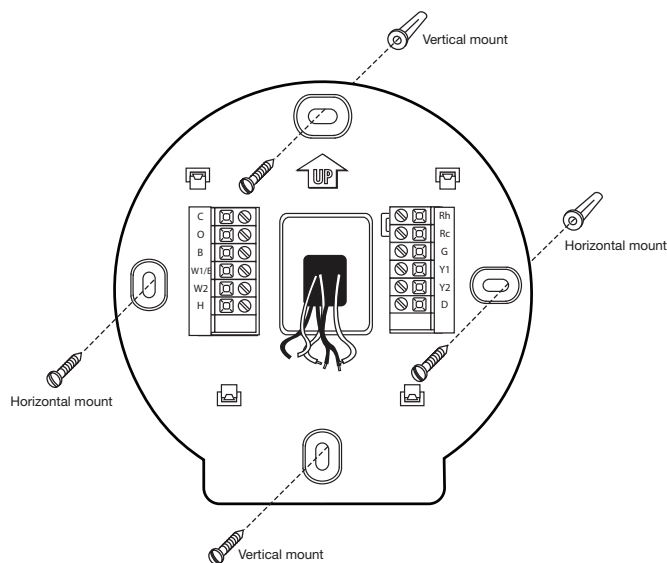


All components of the control system and the thermostat installation must conform to Class II circuits per the NEC Code.

Wire specifications

Use shielded or non-shielded 18 - 22 gauge thermostat wire.

BASE MODULE SUBBASE INSTALLATION AND WIRING



For vertical mount put one screw top and one screw bottom. For horizontal mount put one screw left and one screw right.



Wire the base module's subbase the same way you would wire a hardwired thermostat subbase.



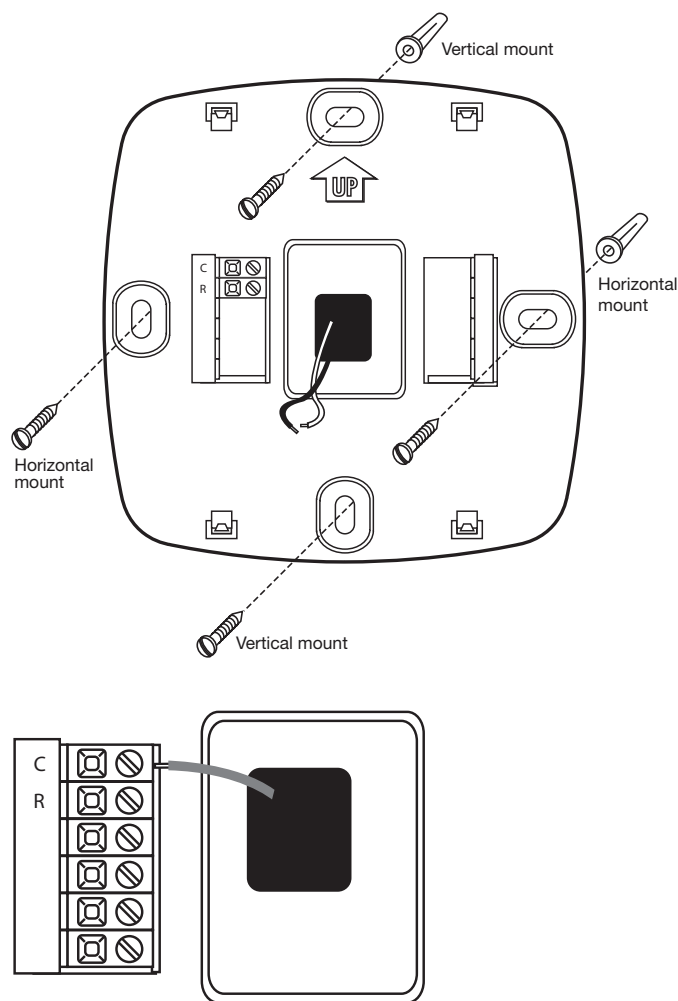
To establish communication from the base module to master thermostat, refer to the directions in the TSTBM3H2CPH6W-A Thermostat-Base Module Communication setup procedure below in this manual.





The base module must be hardwired (C and R terminals connected to 24V power).

THERMOSTAT INSTALLATION AND WIRING



On the back of the thermostat insert 2 AA Alkaline batteries (included).

BATTERY INSTALLATION

Battery installation is optional if there are no remotes connected to the Master Thermostat (C terminal connected). If you connect an outdoor remote and/or indoor remote sensors it is required the thermostat be hardwired.



To ensure a solid fit between the thermostat and the subbase, mount the subbase on a flat wall with the drywall anchors flush to the wall. Using the screws and drywall anchors that were provided with the thermostat.



The TSTBM3H2CPH6W-A can be battery powered only if used as a stand-alone thermostat solution. The TSTBM3H2CPH6W-A must be hardwired (C and R terminals connected to 24V power) if remote sensors (TSTBM-RRS--TW-A or TSTBM-OTS--TW-A) are used.

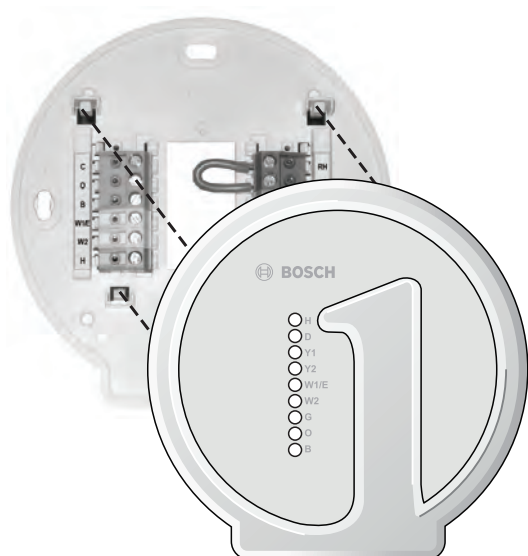
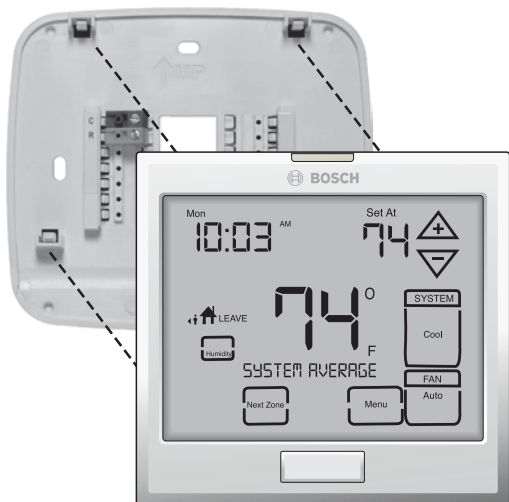
MOUNT THERMOSTAT AND BASE MODULE

Align the 4 tabs on the subbase with corresponding slots on the back of the thermostat or base module. Then push gently until the thermostat or base module.



To insure a solid fit between the thermostat and the subbase:

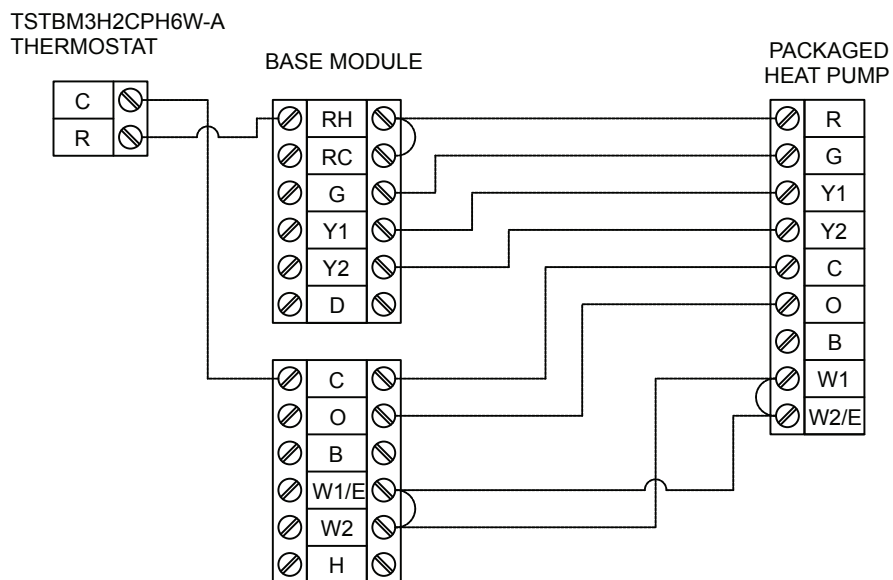
- 1. Mount subbase to a flat wall*
- 2. Use screws provided*
- 3. Drywall anchors should be flush with the wall*
- 4. Wires should be pushed into the wall*



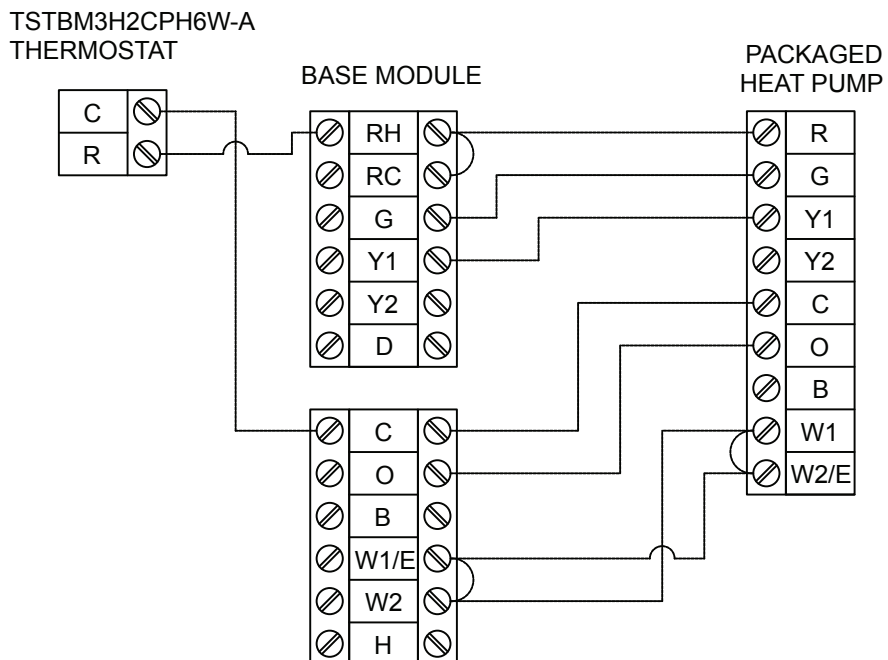
TYPICAL WIRING SCHEMATICS

WIRELESS WITH BASE MODULE TSTBM3H2CPH6W-A

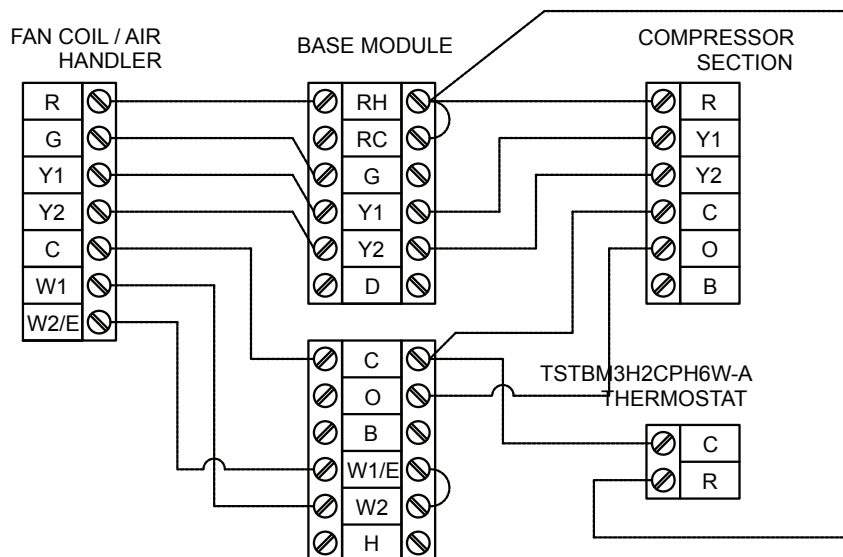
3H/2C HEAT PUMP



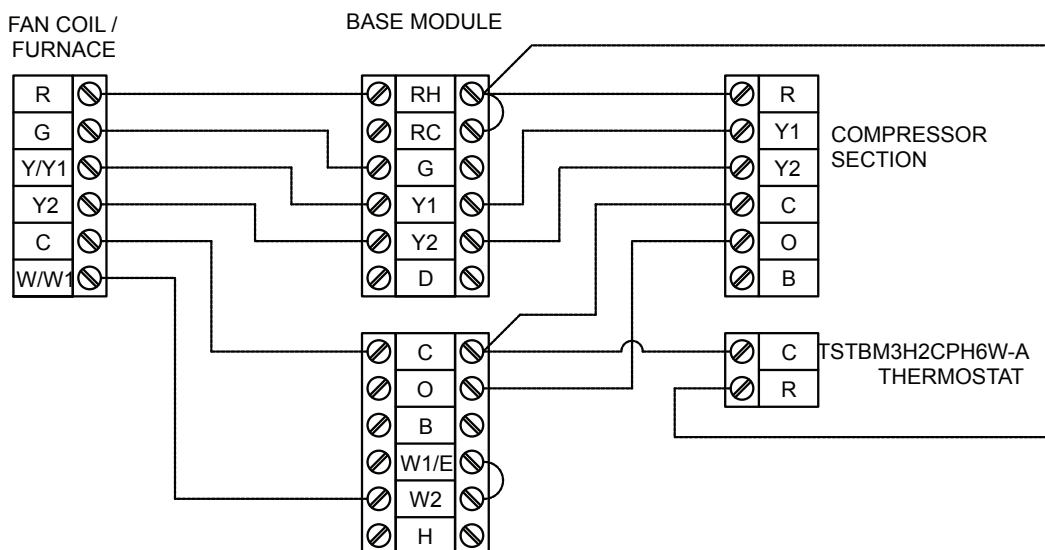
2H/1C HEAT PUMP



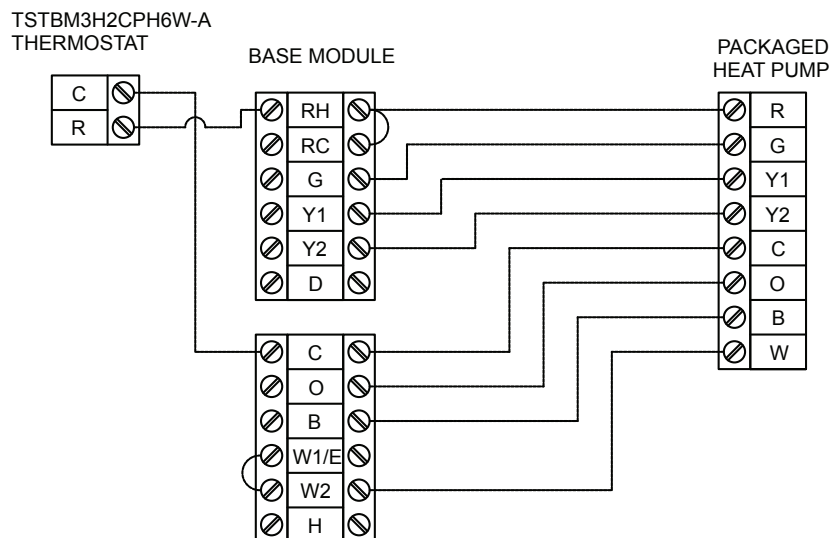
3H/2C SPLIT HEAT PUMP



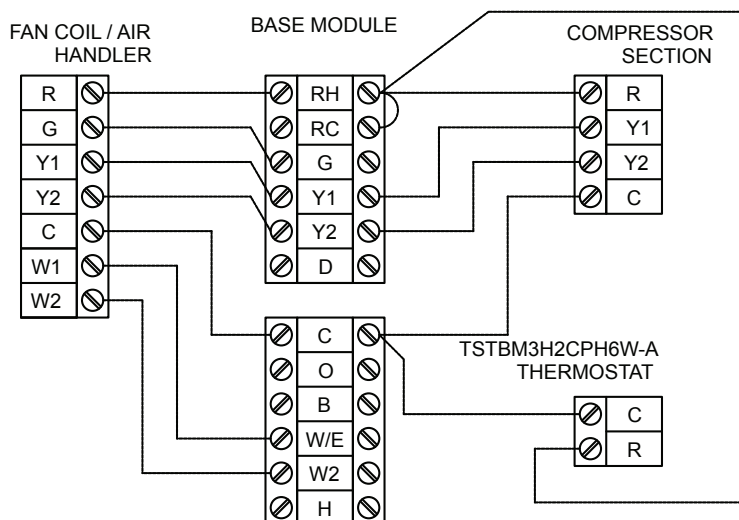
3H/2C HEAT PUMP WITH GAS/OIL FURNACE HEAT BACKUP



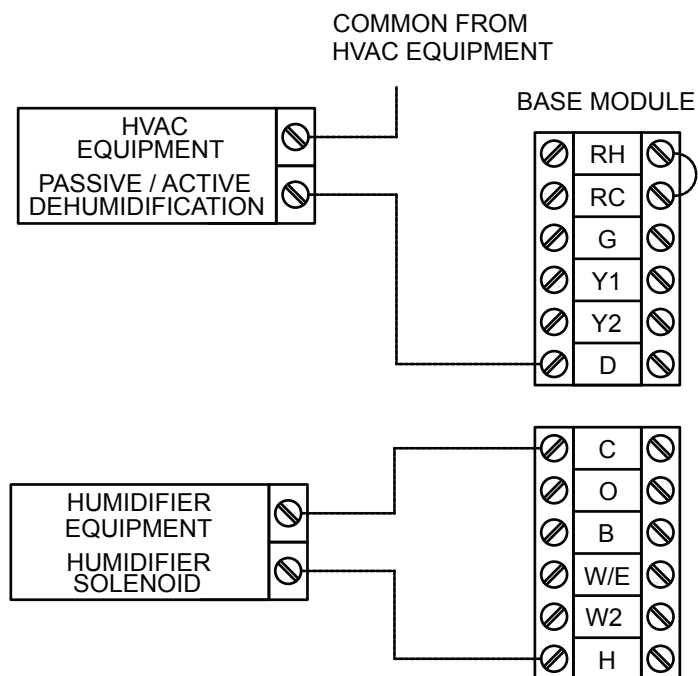
JUMP "E" & "W2" AT THE TSTBM3H2CPH6W-A THERMOSTAT WHEN THE HEAT PUMP EQUIPMENT DOES NOT HAVE AN EMERGENCY HEAT TERMINAL



2H/2C AIR CONDITIONING W/ ELECTRIC HEAT BACKUP



UNIT WITH ACTIVE OR PASSIVE DEHUMIDIFICATION AND HUMIDIFICATION RELAY



TERMINAL DESIGNATIONS ON BASE MODULE

Terminal	2 Heat 2 Cool Conventional System	2 Heat 2 Cool Heat Pump System	3 Heat 2 Cool Heat Pump System
RC	Transformer power (cooling)	Transformer power (cooling)	Transformer power (cooling)
RH	Transformer power (heating)	Transformer power (heating)	Transformer power (heating)
C	Transformer common	Transformer common	Transformer common
B	Energized in heating (not used)	Heat pump changeover valve energized in heating	Heat pump changeover valve energized in heating
O	Energized in cooling (not used)	Heat pump changeover valve energized in cooling	Heat pump changeover valve energized in cooling
G	Fan relay	Fan relay	Fan relay
W/E	First stage of heat	Emergency heat relay	Emergency heat relay
Y	First stage of cool	First stage of heat & cool	First stage of heat & cool
Y2	Second stage of cool	Second stage of cool	Second stage of cool and second stage of heat
W2	Second stage of heat	Auxiliary heat relay, second stage of heat	Auxiliary heat relay, third stage of heat
H	Humidify	Humidify	Humidify
D	Dehumidify	Dehumidify	Dehumidify



If separate transformers for heating and cooling are not present, jump RC and RH terminals at the thermostat and connect the HOT lead from the transformer to RC



TSTBM3H2CPH6W-A Wiring Notes:

- In systems with no emergency heat relay, a jumper can be installed between E and W2
- Due to the internal circuitry, a voltage potential will exist across any terminal and common if that terminal is not connected to a resistive load.
- Bosch Water Source Heat Pumps utilize "O" type reversing valve operation. If your heat pump utilizes "B" type reversing valve operation, substitute the wiring for the "O" terminals for "B".

TERMINAL DESIGNATIONS ON TSTBM3H2CPH6W-A MASTER THERMOSTAT

Terminal	2 Heat 2 Cool Conventional System	2 Heat 2 Cool Heat Pump System	3 Heat 2 Cool Heat Pump System
R	24 VAC Transformer power	24 VAC Transformer power	24 VAC Transformer power
C	Transformer common	Transformer common	Transformer common

POWERING THE TSTBM3H2CPH6W-A MASTER THERMOSTAT

If remote sensors (TSTBM-OTS--TW-A or TSTBM-RRS--TW-A) are to be used with the wireless system you must hardwire the TSTBM3H2CPH6W-A master thermostat.

Once the base module and the thermostat have been securely mounted and both have been completely wired for the applicable system, communication can be established between the two.



ESTABLISHING COMMUNICATION BETWEEN TSTBM3H2CPH6W-A MASTER THERMOSTAT AND THE BASE MODULE

Easy, Two Step Communication Link

To set up the initial link between the Master Thermostat and the base module please follow these steps:

1. Press and hold the base module button for 3 seconds. The **Blue LED** will flash when ready to receive initial signal from **TSTBM3H2CPH6W-A**. (Base module must be powered by 24V. **Blue LED** will be continuously on when 24V power is present.)
2. Hold the **Light key** of the TSTBM3H2CPH6W-A for 10 seconds, the **Blue LED** on the base module will stop flashing after communication has been established between **base module** and the **TSTBM3H2CPH6W-A**.



Insert batteries in the TSTBM3H2CPH6W-A thermostat and have it in hand while at the base module when performing the initial communication setup. Having the two devices together to confirm that communication has been established will be much easier. Now place the thermostat on the wall mounting plate in its intended permanent location.



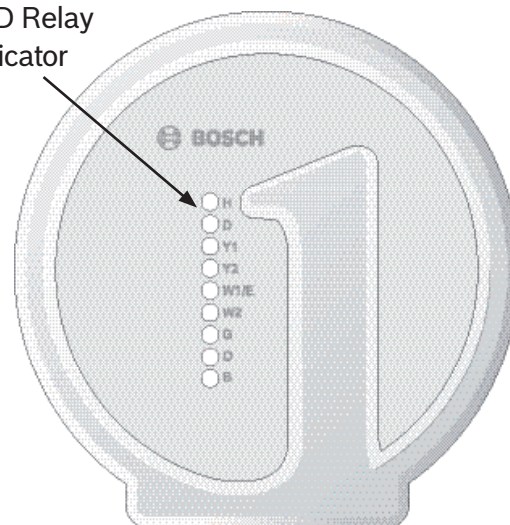
The **Blue LED** on the base module will be on when power is present. The **Blue LED** will flash 3 times every time it receives a signal from **TSTBM3H2CPH6W-A**. When a relay is on the corresponding LED relay indicator will be on.

If the base module does not receive a signal from the **TSTBM3H2CPH6W-A** for 15 minutes it will turn off all relays until communication is reestablished. The **Blue LED** on the base module will also turn off to show communication has been lost.

If communication has been lost for 1 hour and if the freeze protection feature is enabled, heat and emergency heat relays will be turned on. The heat and emergency heat relays will turn on for 10 minutes every hour if there has been a call for heat in the last 24 hours.

Step 1.

LED Relay Indicator



Re-linking the thermostat and Base Module is not necessary for power outages or after a thermostat battery change.

The base module contains multiple LED lights indicating the status of the HVAC equipment

USING MULTIPLE TSTBM3H2CPH6W-A WIRELESS THERMOSTATS

Although utilizing multiple TSTBM3H2CPH6W-A wireless thermostats in one location are all centered around 916 MHz, a random unique communication code is established between a specific thermostat-base module combination. This random code will enable multiple (100+) TSTBM3H2CPH6W-A wireless thermostats to function in one installation site without interfering with one another.



The base module is not water proof. Do not install the base module in the following locations:
 Behind a Chimney
 Where Temp exceeds 150F
 Where rain, snow or extreme hot/cold is possible.



Step 2.

Light key



DO NOT hold the light button on the TSTBM3H2CPH6W-A for more than 10 seconds after Step 2 above has been completed.

Holding the light button down will break the communication link and the base module button will need to be pressed again to reestablish communication.







TECHNICIAN SETUP MENU

This thermostat has a technician setup menu for easy installer configuration. To set up the thermostat for your particular application:

1. Press MENU button
2. Press and hold TECHNICIAN SETUP button for 3 seconds. This 3 second delay is designed so that homeowners do not accidentally access the installer settings.
3. Configure the installer options as desired using the table below. Use the [-] or [+] keys to change settings and the NEXT STEP or PREV STEP key to move from one option to another.



Only press DONE key when you want to exit the Technician Setup options.

Tech Setup Steps				
		LCD will show	Adjustment Options	Factory Default Settings
Filter Change Reminder	This feature will flash FILT in the display after the elapsed run time to remind the user to change the filter. A setting of OFF will disable this feature.		You can adjust the filter change reminder from OFF to 2000 hours of runtime in 50 hour increments.	OFF
Room Temperature Calibration	This feature allows the installer to change the calibration of the room temperature display. For example, if the thermostat reads 70° and you would like it to read 72° then select +2.		You can adjust the room temperature display to ready -4°F to +4°F above or below the factory calibrated reading.	0 °F
Minimum Compressor On Time (min)	This feature allows the installer to select the minimum run time for the compressor. For example, a setting of 4 will force the compressor to run for at least 4 minutes every time the compressor turns on, regardless of the room temperature.		You can select the minimum compressor run time from “off”, “3”, “4”, or “5” minutes. If 3, 4, or 5 is selected, the compressor will run for at least the selected time before turning off.	OFF
Compressor Short Cycle Delay (min)	The compressor short cycle delay protects the compressor from “short cycling”. This feature will not allow the compressor to be turned on for 5 minutes after it was last turned off.		Selecting ON will not allow the compressor to be turned on for 5 minutes after the last time the compressor was on. Select OFF to remove this delay.	ON
Cooling Swing	The swing setting, often called “cycle rate”, “differential” or “anticipation” is adjustable. A smaller swing setting will cause more frequent cycles and a larger swing setting will cause fewer cycles.		The cooling swing setting is adjustable from ±0.2°F to ±2°F. For Example: A swing setting of 0.5°F will turn the cooling on at approximately 0.5°F above the setpoint and turn the cooling off at approximately 0.5°F below the setpoint. See Temperature swing example after the Tech Setup Section	0.5 °F
Heating Swing	The swing setting, often called “cycle rate”, “differential” or “anticipation” is adjustable. A smaller swing setting will cause more frequent cycles and a larger swing setting will cause fewer cycles.		The heating swing setting is adjustable from ±0.2°F to ±2°F. For Example: A swing setting of 0.5°F will turn the heating on at approximately 0.5°F below the setpoint and turn the heating off at approximately 0.5°F above the setpoint. See Temperature swing example after the Tech Setup Section	0.4 °F










To lock the keypad, hold down the \triangle or ∇ keys for 3 seconds. You will see a lock in the display. To unlock the keypad hold down the \triangle or ∇ keys for 3 seconds.

Tech Setup Step (Continued from the previous page)




		LCD will show	Adjustment Options	Factory Default Settings
Keypad Lockout	Keypad lockout allows you to configure the thermostat so that none or some of the keys do not function..		Pick PA or FU PA = partial keypad lockout, which locks all the keys except the \triangleleft or \triangleright keys. FU = Full keypad lockout, which locks out all the keys. Note: Keypad lockout instructions are below	PA
Heating Temperature Setpoint Limit	This feature allows you to set a maximum heat setpoint value. The setpoint temperature cannot be raised above this value.		Use the \triangleleft or \triangleright keys to select the maximum heat setpoint.	90 °F
Cooling Temperature Setpoint Limit	This feature allows you to set a minimum cool setpoint value. The setpoint temperature cannot be lowered below this value.		Use the \triangleleft or \triangleright keys to select the minimum cool setpoint.	44 °F
°F or °C	Select F for Fahrenheit temperature read out or select C for Celsius read out.		°F for Fahrenheit °C for Celsius.	°F
12 or 24 Hour Clock	You can select either a 12 or 24 hour clock setting.		Use the \triangleleft or \triangleright keys to select 12 or 24 hour clock.	12 Hour Clock
Morning Recovery	This feature turns your system on before the WAKE programming time to ensure the environment is at the WAKE setpoint when the WAKE time period begins. This recovery changes over time based on the previous day's experience.		Use the \triangleleft or \triangleright keys to turn on or off.	ON
Time Periods	You can configure this thermostat to have 2 or 4 programmable time periods per day. 2 time periods are: Occupied/Unoccupied 4 time periods are: Wake, Leave, Return, Sleep		Use the \triangleleft or \triangleright keys to select 2 or 4 time periods per day.	4



Tech Setup Step (Continued from the previous page)

		LCD will show	Adjustment Options	Factory Default Settings
Program Options	You can configure this thermostat to have a 7 day program, a 5+1+1 program or nonprogrammable.		Use the ◀ or ▶ keys to select 7d for 7 day, 5d for 5+1+1, or 0d for nonprogrammable.	5d
Display Light	The display light can be configured to come on when any key is pressed or only when the light key is pressed.		OFF configures display light to come on only with the light key, which will save battery power. ON configures the display light to come on when any key is pressed.	ON
Contractor Call Number	Allows you to put your phone number in the display. You can choose ON or OFF		If selected ON , you will see the input screen after pressing next step. Use the ◀ or ▶ keys to select the desired number and the FAN or SYSTEM key to move from one character to another. See note below on operation.	OFF
Beep	When any key is pressed an audible beep will sound. You can choose ON or OFF		If ON is selected the beep will sound. If OFF is selected, there is no sound.	ON
Heat Pump	When turned on the thermostat will operate a heat pump. 1. EM.Heat will show as an option in the system switch. 2. Y will be first stage of heat & cool, W/E will be emergency heat relay & W2 will be auxiliary heat relay.		OFF configures the thermostat for non heat pump systems. ON configures the thermostat for heat pump systems.	OFF
System Switch (only in HP mode)	You can configure the system switch for the particular application: Heat - Off - Cool, Heat - Off, Cool - Off, Heat - Off - Cool-Auto Note: EM. Heat will show if in heat pump mode.		Use the ◀ or ▶ keys until the desired application is flashing.	Heat - Off - Cool
Fan Operation (not available in HP mode)	Select GAS for systems that control the fan during a call for heat. Select ELEC to have the thermostat control the fan during a call for heat.		GAS or ELEC If a system with electric heat is being used, this setting MUST be set to ELEC . When a call for heat is made, the fan will not come on if set to GAS .	GAS

Tech Setup Step (Continued from the previous page)

		LCD will show	Adjustment Options	Factory Default Settings
Gas Auxiliary for Heat Pump (only available in HP mode)	This option will turn the heat pump off 45 seconds after the auxiliary heat relay turns on. For 2 heat applications, the first stage will turn off 45 seconds after the auxiliary stage turns on. For 3 heat applications, the first and second stage will turn off 45 seconds after the auxiliary stage turns on.		Selectable on or off. This option should be ON for applications that uses a gas furnace for auxiliary heat. This is an extremely important feature to set if utilizing a gas furnace. Operation of the gas furnace while the compressor is running will overheat and damage the compressor. This feature is disabled when a TSTBM-OTS-TW-A is connected. See Balance Point feature setup.	OFF
Cooling Fan Delay (seconds)	The cooling fan delay setting will delay the fan from coming on in cool mode and keep running after the compressor shuts off for a short time to save energy in some systems.		You can select the Cooling Fan Delay from OFF, 15, 30, 60 or 90 seconds. If 15, 30, 60 or 90 is selected the fan will not turn on for that many seconds when there is a call for cool and will run for that many seconds after satisfying a call for cool. This feature is disabled when a TSTBM-OTS-TW-A is used. See Balance Point feature setup.	OFF
Outdoor Sensor	Enables the use of an outdoor sensor TSTBM-OTS-TW-A. Connecting a TSTBM-OTS-TW-A allows for a balance point setting. Selecting YES requires the TSTBM3H2CPH6W-A master thermostat to be powered with 24V on C and R terminals. See TSTBM-OTS-TW-A user guide for more information.		When NO is selected the thermostat is unable to connect to an outdoor remote sensor TSTBM-OTS-TW-A. When YES is selected the thermostat is able to connect to an outdoor remote sensor TSTBM-OTS-TW-A. Press and hold connect button on TSTBM-OTS-TW-A until the TSTBM3H2CPH6W-A says FOUND OUTDOOR on display.	NO



Connect an optional TSTBM-OTS-TW-A outdoor remote temperature sensor to enable the balance point tech setup option.













Up to four TSTBM-RRS-TW-A indoor temperature sensors can be connected to one TSTBM3H2CPH6W-A thermostat.

This allows for 5 sensing points (zones). For Example: The local (TSTBM3H2CPH6W-A) plus four TSTBM-RRS-TW-A sensors enables 5 sensing points.

See the tech setup menu below to activate this feature. Reference the installation manual for the TSTBM-RRS-TW-A remote room sensor for detailed instructions on connection and setup.








Tech Setup Step (Continued from the previous page)

		LCD will show	Adjustment Options	Factory Default Settings
Remote Sensor	Enables the use of up to four indoor sensors TSTBM-RRS--TW-A. Selecting YES requires the TSTBM3H2CPH6W-A master thermostat to be powered with 24V on C and R terminals.		When NO is selected the thermostat is unable to connect to an indoor remote sensor TSTBM-RRS--TW-A. When YES is selected the thermostat is able to connect to up to four indoor remote sensors TSTBM-RRS--TW-A. Go to the next step FINDING SENSOR to connect TSTBM-RRS--TW-A.	NO
Finding Sensor	This step connect TSTBM-RRS--TW-A to TSTBM3H2CPH6W-A. The previous step Remote Sensor must be set to YES in order to connect an TSTBM-RRS--TW-A.		The number shown represents the zone Use  or  to select the zone you wish to connect. The zone setting on the TSTBM3H2CPH6W-A and the TSTBM-RRS--TW-A must be the same to connect. See TSTBM-RRS--TW-A user guide for detailed TSTBM-RRS--TW-A connection information. See note above on previous page for more information.	1
Local Temp Sensor	Disable the sensor on the master. At least one TSTBM-RRS--TW-A indoor remote sensor must be connected to disable the local TSTBM3H2CPH6W-A sensor.		YES enables local TSTBM3H2CPH6W-A sensor NO disables local TSTBM3H2CPH6W-A sensor	YES
Freeze Protection	Turns on the heat for 10 minutes each hour if unable to communicate with the TSTBM3H2CPH6W-A master thermostat if there has been a call for heat in the last 24 hours.		YES enables freeze protection NO disables freeze protection	NO
Stages of Heat (only available in HP mode)	You can configure the thermostat to operate a 3 stage heat pump system. 2H 2C = 2 heat, 2 cool 3H 2C = 3 heat, 2 cool This feature only shows if Technician Setup Step for HEAT PUMP is set to ON.		Use the  or  key to change between 2 heat and 3 heat. 2 heat will use Y1 as first stage and W2 as auxiliary. 3 heat will use Y1 as first stage, Y2 as second stage and W2 as third stage.	2H/2C
Balance Point (Requires TSTBM-OTS-TW-A and in HP mode)	Balance point can eliminate the need for a fossil fuel kit. An outdoor temperature above balance point will cause the thermostat to only allow the Y terminal(s) to energize. An outdoor temperature below balance point will cause the thermostat to only allow the W2 to energize.		YES 10, 20, 30, 35, 40, 45, 50 outdoor temperature balance point setting. NO	NO

Balance Point:







The system operates differently when a balance point is used on a dual fuel system. The balance point outdoor temperature setting will be the outdoor temperature at which the thermostat

chooses either the heat pump or gas furnace. For Example: A balance point setting of 30°F will turn on only the heat pump above 30°F and only the gas furnace below 30°F. Y1 will be stage one above 30°F and W2 will be stage one below 30°F.

Tech Setup Step (Continued from the previous page)				
		LCD will show	Adjustment Options	Factory Default Settings
Balance Point (Gas Auxiliary OFF)	Balance point with electric auxiliary can optimize heat pump usage. An outdoor temperature above balance point will cause the thermostat to only allow the Y terminal(s) to energize. An outdoor temperature below balance point will cause the thermostat to allow the Y terminal(s) and the W2 terminal to energize. Note: Only shows up if Heat Pump is set to YES and Outdoor Sensor is turned ON and Gas Auxiliary is turned OFF		10, 20, 30, 35, 40, 45, 50 outdoor temperature balance point setting	NO
Balance Run Time (Requires enabling Balance Point Feature)	Balance point run time will allow the W2 auxiliary terminal to energize even if outdoor temperature is above the selected balance point temperature. If enabled, auxiliary will energize for the current cycle after the balance point run time has expired.		YES 15, 30, 45, 60, 75, 90 continuous run time minutes. NO	NO
Humidify	This feature adds humidity when System key is in Heat .		Use the ◀ or ▶ keys to turn off or on. If ON is selected the humidity will be displayed on the main screen and Hum terminal will energize when humidity setpoint is above ambient humidity in Heat mode.	OFF
Dehumidify	This feature removes humidity when System key is in Cool .		Use the ◀ or ▶ keys to turn on or off. If ON is selected the humidity will be displayed on the main screen and DHM terminal will energize when humidity setpoint is below ambient humidity in Cool mode.	OFF
Humidity Calibration	This feature allows the installer to change the calibration of the ambient humidity displayed.		Use the ◀ or ▶ keys to adjust the calibration +/- 3.	0



Tech Setup Step (Continued from the previous page)

		LCD will show	Adjustment Options	Factory Default Settings
Dehumidify with AC	This feature forces the A/C to run longer to remove humidity when needed. The A/C will “over cool” the room a few degrees until the humidity reaches the desired setpoint.		Use the ◀ or ▶ keys select YES or NO . If selected YES allows over cooling to be used to control humidity in Cool mode. If NO is selected the system will not use over cooling.	NO
Over Cool Limit °F, °C	The amount of over cooling allowed when using A/C to remove humidity. This screen is only shown when ON is selected in the “Dehumidify with AC” tech setup step.		Use the ◀ or ▶ keys to select the maximum number of degrees of over cool. Options are: 2, 3, 4, 5	3
HUM Terminal	Options for how the Hum terminal energizes.		Use the ◀ or ▶ key to select one of the four options. View the HUM Terminal chart below for an explanation of these options.	1
DHM Terminal	Option for how DHM terminal energizes.		Use the ◀ or ▶ keys to select one of the four options. View the DHM Terminal chart below for an explanation of these options.	1
Staging Delay	This feature allows a delay to occur when a second and third stage is needed This allows the previous stage extra time to satisfy setpoint.		Use the ◀ or ▶ keys to select the number of minutes to delay each stage. OFF 5, 10, 15, 30,45, 60,90 delay minutes.	OFF
Satisfy Setpoint	This feature allows the thermostat to keep multiple stages of heat or cool energized until setpoint is satisfied		Use the ◀ or ▶ keys to select the number of minutes to turn on or off.	



UNDERSTANDING SWING AND STAGING

All Bosch thermostats have adjustable swings. Cycling your HVAC system is a balance between user comfort and equipment efficiency. Equipment wear and tear is also a consideration.

- User comfort is maximized by small swings
- Equipment efficiency is maximized by large swings
- Equipment wear and tear is minimized by large swings
- The ideal swing is one at which the system runs as long and with as few cycles as possible without the homeowner being uncomfortable
- Modern systems are designed to run longer with fewer cycles for best efficiency
- Staging systems are designed to be most efficient on first stage (excluding dual fuel systems)
- Equipment life is reduced by frequent on/off cycles
- The 1st stage energizes at 1x swing, the 2nd stage at 2x swing and the 3rd stage at 3x swing.

Example:

- Thermostat system switch set to heat
- Swing setting is 1°F
- Set point is 70°

Temp	Actions
71°F	1st Stage Off
70°F	Set point
69°F	1st Stage On / 2nd Stage Off
68°F	2nd Stage On / 3rd Stage Off
67°F	3rd Stage On

The 1st stage will energize at 69°F and turn off at 71°F. The 2nd stage will energize at 68°F and turn off at 69°F. The 3rd stage will energize at 67°F and turn off at 68°F.

HUM TERMINAL

HUM TERMINAL SETTING	
1	"H" terminal is energized when a heating call is made or a FAN ON call is made
2	"H" terminal is energized when a heating call is made
3	"H" and "G" terminals are energized with and without a heating call
4	"H" terminal only is energized without heating call and remains energized with a heating call

* These setting and condition explanations assume humidity set point has not been satisfied and the equipment is attempting to actively humidify

DHM TERMINAL

DHM TERMINAL SETTING		
Without Cool-to-Dehumidify Feature Active		With Cool-to-Dehumidify Feature Active
1	"D" terminal is energized when a cooling call is made or a FAN ON call is made.	First stage of cooling (Y1,O,G) along with "D" terminal are energized even if space temp is satisfied (within the over cool limit) When the set point is beyond the over cool limit, the "D" will also energize with a FAN ON call
2	"D" and "G" terminals energized even when space temp is satisfied. "D" and "G" remain energized if cooling call is made.	"D" and "G" terminals only are energized even when space temp is satisfied. "D" and "G" remain energized if cooling call is made."
3	"D" terminal only is energized with and without a cooling call.	"D" terminal only is energized with and without a cooling call
4	"D" terminal only is energized without a cooling call. "D" terminal is de-energized when a cooling call is made.	"D" terminal is energized without a cooling call "D" terminal is de-energized when a cooling call is made"

* These setting and condition explanations assume humidity set point has not been satisfied and the equipment is attempting to actively dehumidify



HUMIDIFICATION / DEHUMIDIFICATION RECOMMENDATION FOR BOSCH HEAT PUMP

With a residential Bosch Heat Pump, it is recommended to use the cool-to-dehumidify option with the equipment. When a humidity call is made by energizing the “D” terminal, the fan motor will slow down to better dehumidify the air by over cooling.

Humidification

1. Select HUM Terminal #1. This will work with Bosch Humidifier Series and replace the manual humidistat.

Dehumidification

1. Enable Cool-to-dehumidify feature from the Tech Menu Setup
2. Select DHM Terminal #1

These are just typical settings that would be used with a residential Bosch heat pump. Ultimately, the installer must be aware of the system that the thermostat is controlling and the sequence in which dehumidification and humidification are being addressed to establish the correct thermostat settings.

SETTING TARGET HUMIDITY SETPOINT

Follow the steps below to change your target humidity setpoint.

1. Press the HUMIDITY key
2. Use the \triangleup key to select the target humidity setpoint.
3. Press **DONE** when completed



“D” and “H” Terminals use the “R” Terminal to complete the circuit. This is a normally open circuit.

The target humidity setpoint is not programmable. Unlike temperature, humidity does not change quickly and should not be programmed.

Humidity is only energized during heat.

Dehumidify is only energized during cool. Heat and Cool each have their own target setpoints.



TARGET HUMIDITY SETPOINT KEYS



HUMIDITY KEY

AMBIENT HUMIDITY DISPLAY

Ambient humidity will flash opposite the day and time, if the optional TSTBM-OTS--TW-A outdoor temperature sensor is installed the ambient outdoor temperature will also cycle in the display.



AMBIENT HUMIDITY



DAY & TIME



OUTDOOR TEMPERATURE



RECOMMENDED HEATING SETTINGS:**Increasing Humidity**

The table below shows recommended indoor humidity levels in relation to outdoor temperatures during heating (adding humidity).

Outside Temperature (0°F)	Recommended Relative Humidity
+20° and above	35% to 40%
+10°	30%
0°	25%
-10°	20%
-20°	15%

RECOMMENDED COOLING SETTINGS:

Consult your professional HVAC technician for recommended settings for your climate.

SET TIME

1. Press **MENU**
2. Press **SET TIME**
3. Day of the week will be flashing. Use the **[+]** or **[-]** key to select the current day of the week.
4. Press **NEXT STEP**
5. The current hour is flashing. Use the **[+]** or **[-]** key to select the current hour. When using 12-hour time, make sure the correct a.m. or p.m. choice is selected.
6. Press **NEXT STEP**
7. Minutes are now flashing. Use the **[+]** or **[-]** key to select current minutes.
8. Press **DONE** when completed

PROGRAMMING

All programmable Bosch thermostats are shipped with an energy saving pre-program. You can customize this default program by following the Set Program Schedule Instructions below.

Your thermostat can be programmed to have each day of the week programmed uniquely (7days), all the weekdays the same with a separate program for Saturday and a separate program for Sunday (5+1+1), or nonprogrammable. There are four time periods for each day (**WAKE**, **LEAVE**, **RETURN**, **SLEEP**).

This thermostat has a programmable fan feature, which allows you to run the fan continuously during any time period.

Set 5+1+1 Program Schedule

To customize your 5+1+1 program schedule, follow these steps:

Weekday:

1. Select **HEAT** or **COOL** using the **SYSTEM** key.



You have to program heat and cool each separately.

2. Press **MENU**
3. Press **SET SCHED.**



*Monday-Friday is displayed and the **WAKE** icon is shown. You are now programming the **WAKE** time period for the weekday setting.*

Additional step if TSTBM-RRS--TW-A indoor remote sensor is connected.

The TSTBM3H2CPH6W-A master thermostat will either average all sensors (system average) or only use one sensor for the system ambient temperature (priority). The default setting is **SYSTEM AVERAGE**, which means all sensors are averaged to create the system average ambient temperature reading. The **NEXT ZONE** key can be pressed to change the priority. The system information area of the display shows the priority.

For Example: There is an TSTBM-RRS--TW-A connected and it is named **REMOTE 1**. If the **NEXT ZONE** key is pressed until **REMOTE 1** is shown, then the **REMOTE 1** ambient temperature reading will be used exclusively for that time period. All other sensors will be ignored.

























4. Time is flashing. Use the **[+]** or **[-]** key to make your time selection for the weekday **WAKE** time period.



























*If you want the fan to run continuously during this time period, select **ON** with the **FAN (3)** key.*

5. Press **NEXT STEP**
6. The setpoint temperature is flashing. Use the **[+]** or **[-]** key to make your setpoint selection for the weekday **WAKE** time period.
7. Press **NEXT STEP**



Factory Default Program					
Day of the Week	Events	Time	Setpoint Events Time Temperature (Heat)	Setpoint Temperature (Cool)	Zone (TSTBM-RRS--TW-A Temperature Sensor is connected)
Weekday	Wake  	6 a.m.	70° F (21° C)	75° F (24° C)	System Average
	Leave  	8 a.m.	62° F (17° C)	83° F (28° C)	System Average
	Return  	6 p.m.	70° F (21° C)	75° F (24° C)	System Average
	Sleep  	10 p.m.	62° F (17° C)	78° F (26° C)	System Average
Saturday	Wake  	8 a.m.	70° F (21° C)	75° F (24° C)	System Average
	Leave  	10 a.m.	62° F (17° C)	83° F (28° C)	System Average
	Return  	6 p.m.	70° F (21° C)	75° F (24° C)	System Average
	Sleep  	11 p.m.	62° F (17° C)	78° F (26° C)	System Average
Sunday	Wake  	8 a.m.	70° F (21° C)	75° F (24° C)	System Average
	Leave  	10 a.m.	62° F (17° C)	83° F (28° C)	System Average
	Return  	6 p.m.	70° F (21° C)	75° F (24° C)	System Average
	Sleep  	11 p.m.	62° F (17° C)	78° F (26° C)	System Average

YOU CAN USE THE TABLE BELOW TO PLAN YOUR CUSTOMIZED PROGRAM SCHEDULE IF USING 5+1+1.

Custom User Schedule					
Day of the Week	Events	Time	Setpoint Events Time Temperature (Heat)	Setpoint Temperature (Cool)	Zone (TSTBM-RRS--TW-A Temperature Sensor is connected)
Weekday	Wake  				
	Leave  				
	Return  				
	Sleep  				
Saturday	Wake  				
	Leave  				
	Return  				
	Sleep  				
Sunday	Wake  				
	Leave  				
	Return  				
	Sleep  				



8. There are a total of 4 programmable times. After you have set the “**Wake**” time above, set the remaining three; “**Leave**”, “**Return**”, and “**Sleep**” Repeat steps 4 through 7 for weekday **LEAVE** time period, for weekday **RETURN** time period, and for weekday **SLEEP** time period.

Saturday:

9. Repeat steps 4 through 7 for Saturday **WAKE** time period, for Saturday **LEAVE** time period, for Saturday **RETURN** time period, and for Saturday **SLEEP** time period.

Sunday:

10. Repeat steps 4 through 7 for Sunday **WAKE** time period, for Sunday **LEAVE** time period, for Sunday **RETURN** time period, and for Sunday **SLEEP** time period.

Set 7 Day Program Schedule

To customize your 7 day program schedule, follow these steps:

Monday:

1. Select **HEAT** or **COOL** using the **SYSTEM** key.



You have to program heat and cool each separately

2. Press **MENU**
3. Press **SET SCHED**



*Monday-Friday is displayed and the **WAKE** icon is shown. You are now programming the **WAKE** time period for the Monday setting.*

Additional step if TSTBM-RRS--TW-A indoor remote sensor is connected.

The TSTBM3H2CPH6W-A master thermostat will either average all sensors (system average) or only use one sensor for the system ambient temperature (priority). The default setting is **SYSTEM AVERAGE**, which means all sensors are averaged to create the system average ambient temperature reading. The **NEXT ZONE** key can be pressed to change the priority. The system information area of the display shows the priority.

For Example: There is an TSTBM-RRS--TW-A connected and it is named **REMOTE 1**. If the

NEXT ZONE key is pressed until **REMOTE 1** is shown, then the **REMOTE 1** ambient temperature reading will be used exclusively for that time period. All other sensors will be ignored.

4. Time is flashing. Use the **[+]** or **[-]** key to make your time selection for the Monday **WAKE** time period.



*If you want the fan to run continuously during this time period, select **ON** with the **FAN** key*

5. Press **NEXT STEP**
6. The setpoint temperature is flashing. Use the **[+]** or **[-]** key to make your setpoint selection for the Monday **WAKE** period.
7. Press **NEXT STEP**
8. Repeat steps 4 thru 7 for Monday **LEAVE** time period, for Monday **RETURN** time period, and for Monday **SLEEP** time period.

Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday:

Repeat steps 4 thru 7 for the remaining days of the week.



Auto changeover will switch between heating and cooling as needed. It is very important to make sure the cooling setpoint temperature is at least 3° above the heating setpoint temperature and that the heating setpoint temperature is at least 3° below the cooling setpoint temperature.



The programmable fan feature will run the fan continuously during any time period it is programmed to be on. This is the best way to keep the air circulated and to eliminate hot and cold spots in your building.

SPECIFICATIONS

TSTBM3H2CPH6W-A Thermostat

The display range of temperature	41°F to 95°F (5°C to 35°C)
The control range of temperature	44°F to 90°F (7°C to 32°C)
Load rating	1 amp per terminal, 1.5 amp maximum all terminals combined
Display accuracy	± 1°F
Swing (cycle rate or differential)	Heating is adjustable from 0.2°F to 2.0°F Cooling is adjustable from 0.2°F to 2.0°F
Power source	18 to 30 VAC, NEC Class II, 50/60 Hz for hardwire (common wire)
Operating ambient	32°F to +105°F (0° to +41°C)
Operating humidity	90% non-condensing maximum
Dimensions of thermostat	4.7"W x 4.4"H x 1.1"D
Frequency	916 MHz

Base Module

Load rating	1 amp per terminal, 1.5 amp maximum all terminals combined
Power source	18 to 30 VAC, NEC Class II, 50/60 Hz
Operating ambient	32°F to +150°F (0° to +65°C)
Operating humidity	90% non-condensing maximum

TROUBLESHOOTING

Troubleshooting the thermostat communication with the base module or remote sensors:	
If the thermostat is not communicating with the base module, follow these steps:	<ol style="list-style-type: none"> 1. Reestablish the communication following the steps on page 13 2. Confirm that the base module has power from the air handler unit by observing that the LED lights are visible. If LED lights are off, verify that there is power to the air handler and the wiring between the air handler unit and base module are correct. 3. Ensure that the thermostat has good battery power by checking if the battery icon is present or not. If the battery icon is present on the thermostat display, replace the batteries and perform the communication setup as described on page 13 again.
If the outdoor temperature sensor or remote room temperature sensor are not communicating with the thermostat, follow these steps:	<ol style="list-style-type: none"> 1. Reestablish the communication for that particular device following the steps in the manual for that component. 2. Ensure that the remote sensor has good battery power by checking if the battery icon is present or not. The thermostat will also display "bA" next to the components name if the sensor's batteries are low. If the battery icon is present on the sensor's display, replace the batteries and perform the communication setup as described in that sensor's manual.



**CONTACT YOUR LOCAL BOSCH DEALER
OR INSTALLING CONTRACTOR FOR
PRODUCT SUPPORT.**

Field Technical Support:

(954) 776-5471

Bosch

601 N.W. 65th Ct.

Ft. Lauderdale, FL 33309

www.bosch-climate.us



LIMITED WARRANTY

Models Covered

This limited warranty is provided by FHP Manufacturing Company ("FHP") and covers the Bosch TST Thermostat (hereinafter referred to as "Product"). This warranty is provided to the original purchaser of the Product as long as the Product remains installed at its original place of installation.

WARRANTY COVERAGE

Limited Warranty

FHP warrants that all internal components incorporated into the Product at the time of shipment by FHP shall remain free from defects in workmanship and materials for the shorter of five (5) years from proof of certificate of occupancy date, five (5) years from proof of certified start up date or six (6) years from date of manufacture provided it is installed and properly maintained by a qualified and trained HVAC contractor and the other conditions of this warranty are met. If FHP determines that the Product has a defect in workmanship or materials, FHP, at its option, will repair or replace the defective part.

ITEMS NOT COVERED

This limited warranty does not cover the following circumstances:

1. Components or parts not provided by FHP.
2. Components or parts on which the tags or nameplates have been removed, altered or defaced.
3. Scratches in or discoloration of finishes.
4. Serviceable items and normal maintenance as required per the Installation and Maintenance Manual.
5. The workmanship of any installer. FHP disclaims and does not assume any liability of any nature for unsatisfactory performance caused by improper installation, repair or maintenance.
6. Any labor or material costs for removal, reinstallation, repair and replacement of the defective component or part.

7. Electricity or fuel costs, or any increases or unrealized savings in same, for any reason whatsoever.
8. Damage caused by excessive temperatures or pressures, fuel or gas explosion, electrochemical reaction, water and air impurities, electrical failures, use during construction, flooding or acts of God.
9. Any damage or failure resulting from the introduction of harmful chemicals, caustic fluids, or liquids detrimental to any unit component, including but not limited to improperly applied or maintained heat transfer fluids or chlorinated pool or spa water.
10. Any damage or failure resulting from improper unit sizing.
11. Shipping charges, delivery expenses or administrative fees incurred by the purchaser in repairing or replacing the Product.

CONDITIONS OF WARRANTY

The warranty herein is void under the following circumstances:

1. Failure or malfunction resulting from improper or negligent operation, accident, abuse, freezing, electrical imbalance characteristics, misuse, unauthorized alteration, incorrect electrical supply, electrical surges, or improper installation, repair or maintenance. See the Installation and Maintenance Manual for installation and maintenance information.
2. Failure or malfunction resulting from any conditions within the structure, including mold and/or mildew and/or any chemical or toxin secreted there from or damage resulting from mold, fungus or bacteria.
3. Failure or malfunction resulting from a contaminated or corrosive air or liquid supply, the addition of unapproved chemicals, operation at abnormal temperatures, pressures or flow rates, opening of the refrigerant circuit by unqualified personnel or any attachment, accessory or component not authorized and approved by FHP. See the Installation and Maintenance Manual for installation and maintenance information.



NOTES

4. Failure or malfunction due to misapplication or faulty building design or construction, including inadequate refrigerant levels, condensate drain, duct work design or installation.
5. Product on which payment to FHP is or has been in default.
6. Work performed without prior authorization or approval and without authorization/requisition number and without proper documentation verifying compliance with above terms.

LIMITED WARRANTY

OTHER THAN THE OBLIGATIONS OF FHP EXPRESSLY SET FORTH HERIN, **FHP DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** FHP'S SOLE OBLIGATION WITH RESPECT TO THE PRODUCT AND **PURCHASER'S EXCLUSIVE REMEDIES ARE SET FORTH IN THE FOREGOING LIMITED WARRANTY. FHP SHALL NOT BE LIABLE FOR ANY INDIRECT, PUNITIVE, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR SIMILAR DAMAGES** INCLUDING, WITHOUT LIMITATION, INJURY OR DAMAGE TO PERSONS OR PROPERTY OR DAMAGES FOR LOSS OF USE, LOST PROFITS, INCONVENIENCE OR LOSS OF TIME.



Note that any repaired or replaced product will be warranted for only the unexpired term of the original warranty.



Some states do not allow the exclusion of limitation of damages, or limitations on how long an implied warranty lasts, so the above limitations and exclusions may not apply to you.

WARRANTY CLAIMS PROCESS

If you have a warranty claim you should notify the contractor who installed your Product and ask that the contractor notify FHP Manufacturing Company, 601 N.W. 65th Court, Ft. Lauderdale, FL 33309. To process your claim, you will need a copy of your original invoice or other proof of purchase, the product serial number and documentation showing the original installation date and location. The alleged defective components or parts must be returned to FHP in accordance with FHP procedure then in force for handling goods returned for the purpose of inspection to determine cause of failure (contact FHP if you have questions regarding the return process). If FHP determines that the returned components and/or parts are defective and that this warranty applies, FHP will furnish the repaired or replacement components and/or parts to the contractor who installed your Product.

This Warranty applies to FHP products installed in the Continental United States and Canada only.



NOTES



BOSCH

601 N.W. 65th Court, Ft. Lauderdale, FL 33309
Phone: 954-776-5471 | Fax: 954-776-5529
www.bosch-climate.us